

New York State Department of Transportation

Yellow Flag NB2358W003

By: Alex Abreu

Flag Date: April 14, 2023

Superseding Information:

No Flags Superseded

Structure Information

BIN: 1065318

Feature Carried: 278I278IX2M23027

Feature Crossed: 6TH AVENUE

Orientation: 8 - NORTHWEST

Region: 11 - NEW YORK CITY

County: KINGS

Political Unit: City of NEW YORK

Approximate Year Built: 1962

Posted Load Matches Inventory : Yes

Bridge Load Posting (Tons) : Not Posted for Load

Primary Owner: New York State Department of Transportation

Primary Maintenance Responsibility: 12 - State - Subcontracted to another Party

Typical or Main Span Type: 3 - Steel, 02 - Stringer/Multi-Beam or Girder

This Bridge is not a Ramp

Number of Spans: 322

Verbal Notification Information

Person Notified: Heinz Joachim, P.E.

Date: April 19, 2023 10:00:00 AM

Of: NYSDOT Region 11

Signature Information

Signature: Alex Abreu, P.E. 099761-1

Date: April 28, 2023

Reviewed By: Robert Kemp

Date: April 28, 2023

Attachments: 10

Flagged Elements

Parent Element	Element	Total Quantity	Unit
Span Number : 23			
	107 - Steel Open Girder/Beam	903	ft

Flagged Condition Description

This Yellow Flag No. NB2358W003 is NEW.

Location: Span 23, Girder G11 at Pier 23 above the left lane of 65th Street EB roadway between 4th and 5th Avenue.

Description:

The end of Girder G11 on the Span 23 Side of Pier 23 exhibits section loss in the lower web above the bottom flange in front of the bearing (begin side of bearing) over a 40"L x 5"H area with remaining web thickness ranging from 0.21" to 0.6875" and remaining average web thickness of 0.42" resulting in approximately 39% average section loss over this web bearing area (Photo #5 and #6). The localized web area adjacent to the front side of the bearing exhibits average localized section loss of 60% for 8" high. The full height of the girder web exhibits section loss along the guide angle with remaining web thickness ranging from 0.23" to 0.57" resulting in approximately 30% overall shear web area loss. (Photos #7 and #8) In addition, the girder web exhibits two corrosion holes in the lower web approximately 16" from the front side of the bearing for 1/2" diameter and 1"L x 3/4"H approximately 2" above the bottom flange and one 1/8" diameter corrosion hole approximately 7" above the bottom flange adjacent to the guide angle (Photos #9 and #10).

The right side end diaphragm connection plate to Girder G11 exhibits 50% section loss for the bottom 12" of the stiffener with one corrosion hole for 4"H x 1/2"W at the bottom of the stiffener. The left side end diaphragm connection plate has previously installed steel reinforcement angles which are in good condition. The bottom flange of Girder G11 exhibits 1/16" deep section loss for 24"L x 2"W at the edge of the right side. The guide angles exhibit 1/16" deep section loss for the full width of the angles for the bottom 3" at the left angle and bottom 12" at the right angle with up to 1" thick pack rust between the guide angle and girder web for the full height of the angles at both faces of the girder. (Photo #10) (refer to Yellow Flag condition sketches #2 and #3 for more details)

This is a newly flagged condition.

Notes:

1. Adjacent Girder G10 exhibits average localized section loss of 35% in the web area adjacent to the front side of the bearing for 8" high. The full height of the girder web exhibits 1/8" deep section loss along the guide angles for 2" wide at the left face and 6" wide at the right face. The average section loss over the web bearing area for 40"L in front of the bearing (begin side of bearing) is approximately 24%. The bottom flange exhibits 1/8" deep section loss for 18" x 2"W at both edges of the flange.
2. Adjacent Girder G12 has previously installed steel reinforcement plates and angles which are in good condition.
3. A double lane closure in the left and center lanes on EB roadway and 30ft bucket truck are required to access this location
4. This girder location was initially inspected on 4/12/2023 but was revisited on 4/14/2023 to obtain further D-meter readings at the flagged location along with the adjacent girders and is considered as the date of inspection.
5. The previous 2022 SILO CS3 Mini Report documented the above girder G11 location with the following defect :
The end of Girder G11 on Span 23 Side of Pier 23 exhibits 1/8" deep section loss for the full height of the web along the guide angle at both faces of the girder with 1/8" diameter corrosion hole in the web adjacent to guide angle approximately 7" from bottom flange and 5" from end of girder. The lower web at the girder exhibits 1/8" deep section loss for 36" L x 5" H above the bottom flange at both faces of the girder with two corrosion holes for 1/2" diameter and 1" L x 3/4" H approximately 20" from end of girder and 2" from bottom flange with 3/16" deep section loss surrounding holes at the right face for 2" wide. The end diaphragm stiffener exhibits 50% section loss for the bottom 12" of right side stiffener with 4" H x 1/2" W hole at bottom of stiffener. The left side stiffener is in good condition. The bottom flange exhibits 1/16" deep section loss for 24" L x 2" W at the edge of the right side. The guide angles exhibit 1/16" deep section loss for the full width of the angles for the bottom 3" at left angle and bottom 12" at right angle. The guide angles exhibit up to 1/2" thick pack rust between angle and girder web.

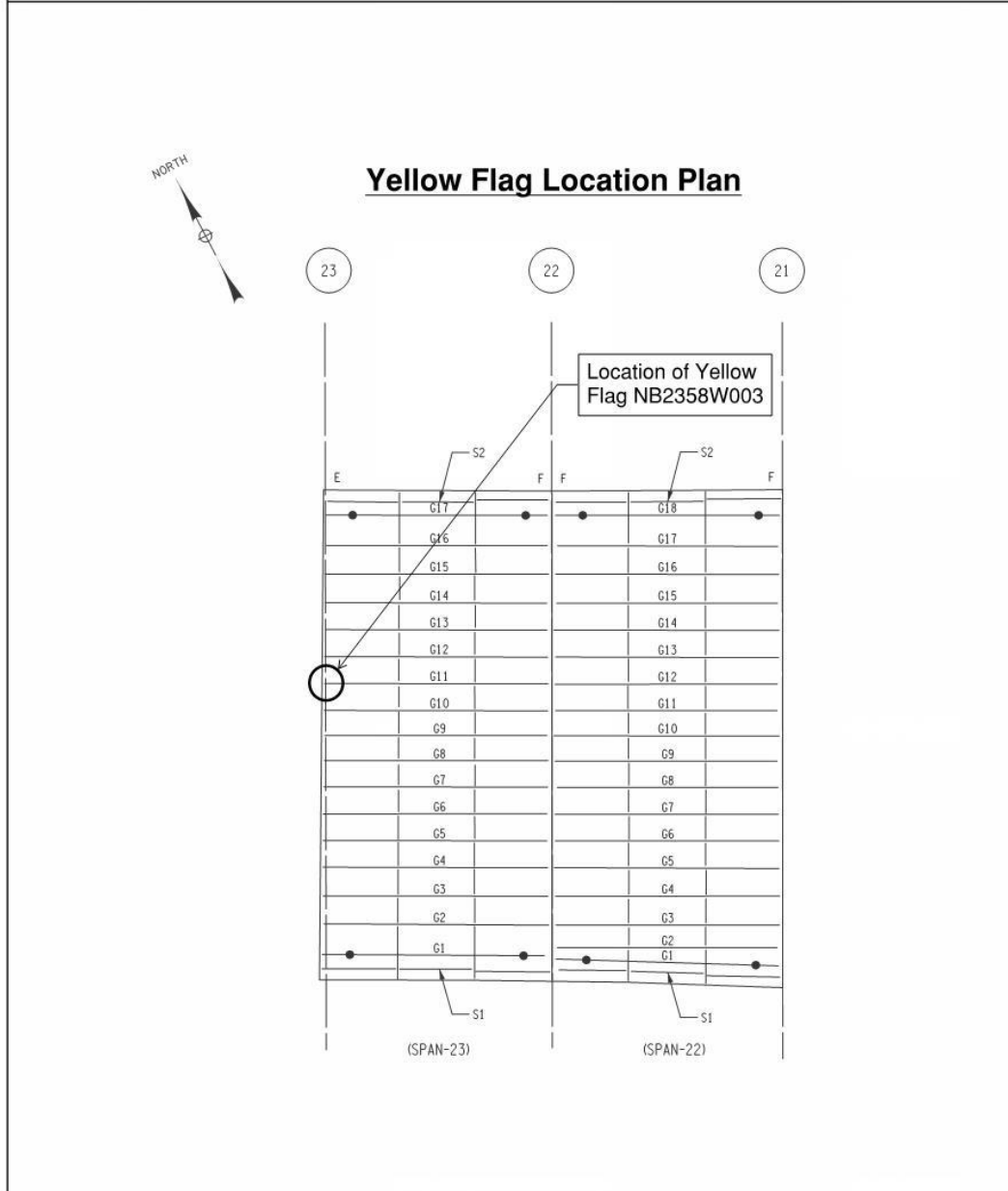
Flag PhotographsPhoto Number: **1**Photo Filename: **23_Flag Location Plan.jpg**Gowanus Expressway
2023 Biennial Inspection - Field SketchBIN: 1065318Team: AA/TSDate: 04/14/2023Span: 23Location: Girder G11 at Pier 23**wsp****Attachment Description: Flag Location Plan**

Photo Number: 2

Photo Filename: 23_Span 23_Girder G11_Connection Detail.jpg

Gowanus Expressway
2022 Biennial Inspection - Field Sketch

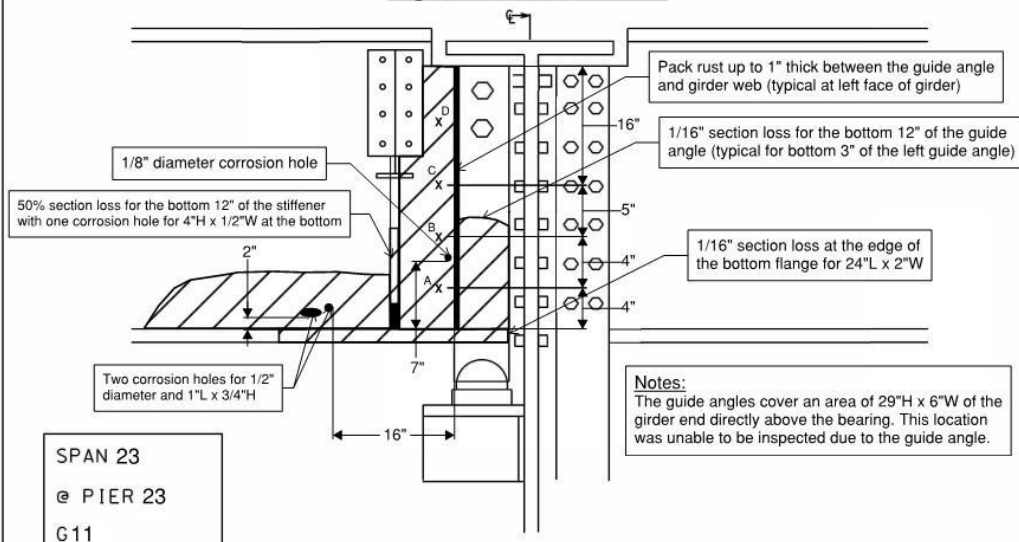
BIN: 1065318

Team: AA/TS

Date: 4/14/2023

Span: 23

Location: Girder G11 at Pier 23

Right Face of Girder G11

SCALE: N.T.S

Point	D-Meter Readings (in)	Calculated Section Loss (%)
A	0.23	67%
B	0.32	53%
C	0.55	20%
D	0.57	17%

Section Loss Calculations

Original web thickness = 0.6875" (measured in field)

Remaining shear web area = $(0.23 \times 4) + (0.32 \times 4) + (0.55 \times 5) + (0.57 \times 16) = 14.07 \text{ in}^2$ As-built shear web area = $0.6875 \times 29 = 19.94 \text{ in}^2$ Overall shear web area section loss = $(19.94 \text{ in}^2 - 14.07 \text{ in}^2) / 19.94 \text{ in}^2 = 30\%$ Average localized section loss adjacent to bearing = $(0.6875 - [(0.23 + 0.32) / 2]) / 0.6875 = 60\%$

wsp

Attachment Description: Yellow Flag Condition Sketch_1

Photo Number: 3

Photo Filename: 23_Span 23_Pier 23_Girder G11_D-meter readings.

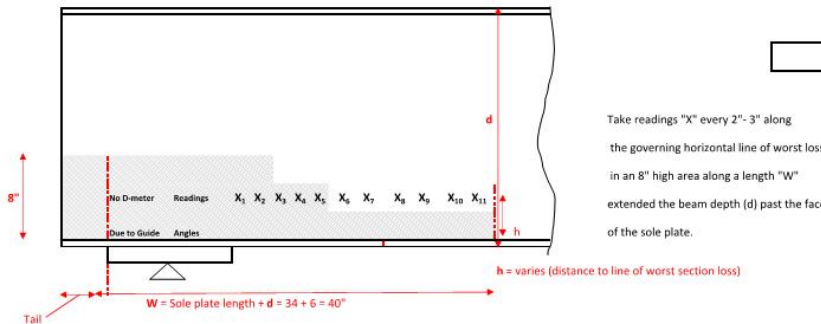
GIRDER LOWER WEB DETERIORATION OVER BEARING - LOAD RATING SHEET

TL: Alex Abreu

BIN: 1065318 (Sp 23_P23_G11)

DATE: 4/14/2023

Girder without Bearing Stiffeners



Girder size: _____ Sole plate length = 6 inches d = 34 inches tw = 0.6875 inches tf = _____ inches

W = 40 inches stiffener dimensions = _____ x _____ inches Tail = 0 inches

D-Meter reading:	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	remaining tw (avg)
Distance from Front of Bearing (in):	+4	+9	+13.5	+16	+19	+23	+26	+29	+32	+35	+37	
4/12/2023	0.42	0.52	0.6875	0.21	0	0.23	0.5	0.51	0.5	0.45	0.61	0.4215909
Notes:												
-Readings were taken from front of bearing since guide angles completely cover web area directly above the bearing.												
-X5 takes into account the two corrosion holes which start at 16" from front of bearing and spans over 3" long area.												
-Previously installed steel angle bolted to the girder web starting at 9" from front of bearing to reinforce end diaphragm connection plate. The steel angle is approximately 4.5" long and D-meter reading assumed to be 0.6875" within area.												
Average Section Loss over D-meter readings	=[(0.6875-0.4216)/0.6875] = 39%											
Remaining Web Area (in ²)	=[(4*0.42)+(5*0.52)+(4.5*0.6875)+(2.5*0.21)+(3*0)+(4*0.23)+(3*0.5)+(3*0.51)+(3*0.45)+(2*0.61)] = 15.92 in ²											
As-built Web Area (in ²)	=0.6875*37 = 25.45 in ²											
Overall Web Bearing Area Loss (%)	=[(25.45-15.92)/25.45] = 38%											

Attachment Description: Yellow Flag Condition Sketch_2

Photo Number: 4

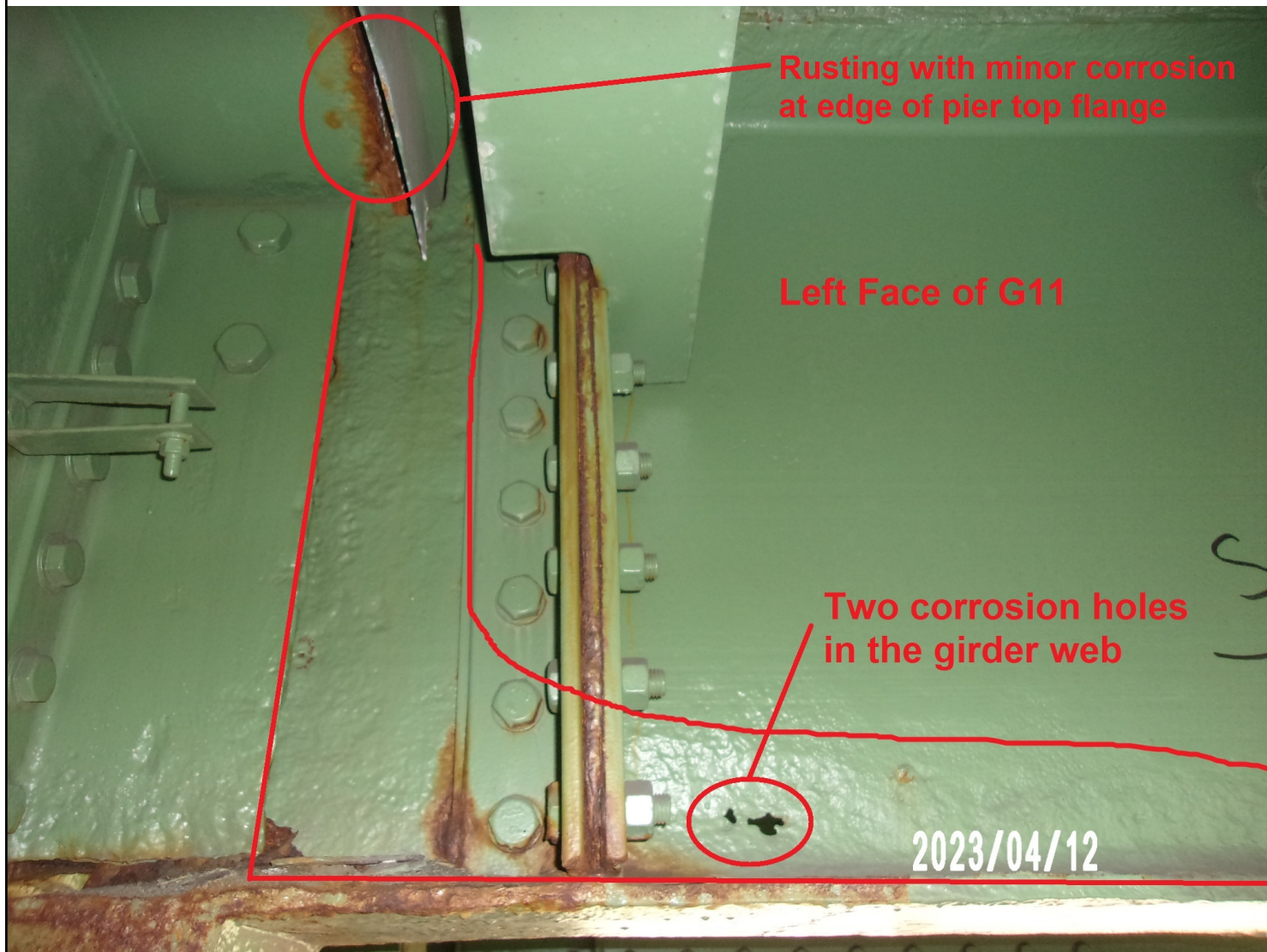
Photo Filename: 23_113_6062.JPG



Attachment Description: General view of the flagged location at Girder G11 in Span 23 at Pier 23. Looking End.

Photo Number: 5

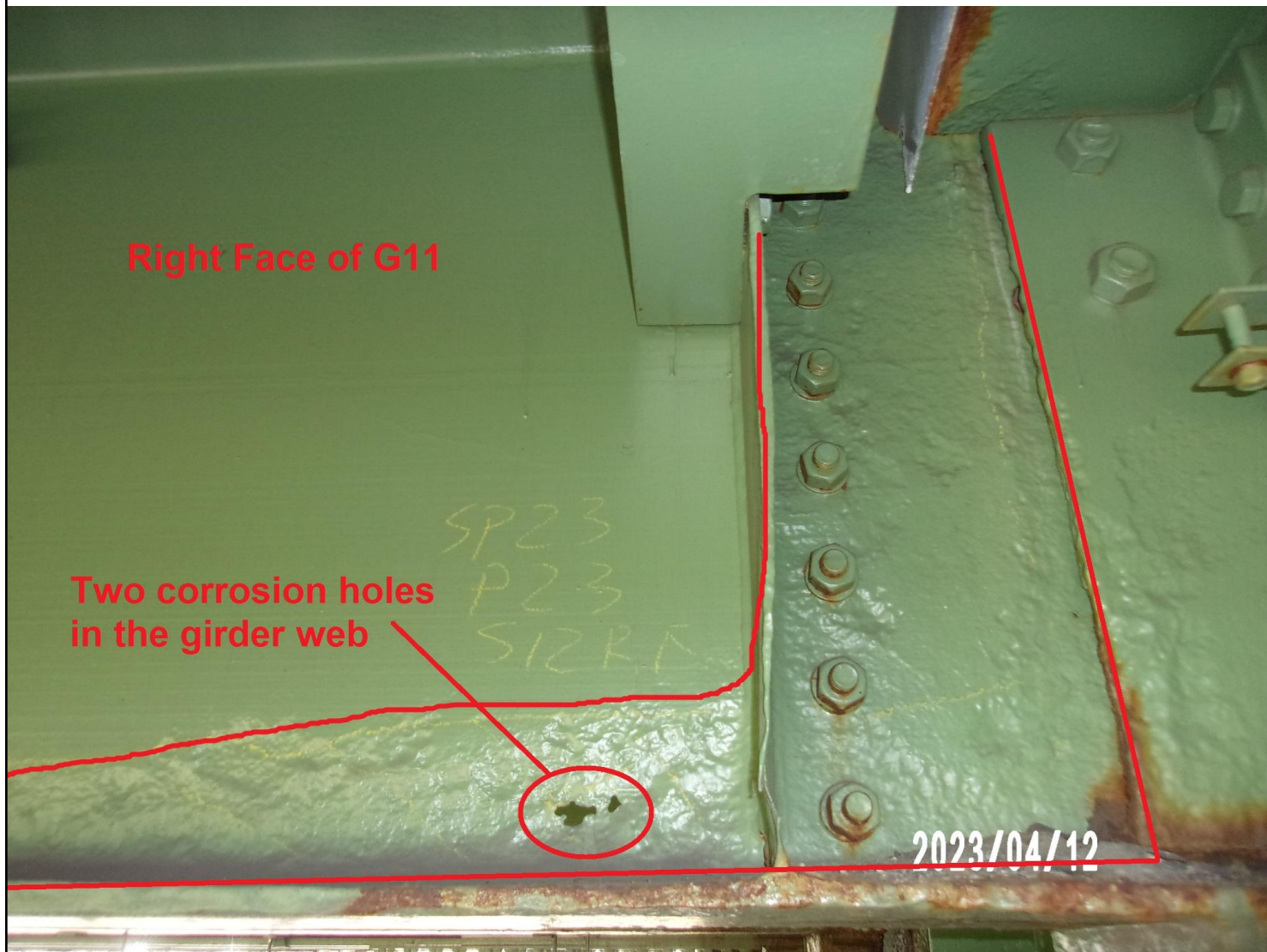
Photo Filename: 22_113_6059.JPG



Attachment Description: The left face of Girder G11 in Span 23 at Pier 23. The girder exhibits section loss in the lower web above the bottom flange with remaining web thickness ranging from 0.21" to 0.61" and remaining average web thickness of 0.42" resulting in approximately 39% average section loss. Also, the lower web exhibits two corrosion holes for 1/2" diameter and 1"L x 3/4"H. Looking Right.

Photo Number: 6

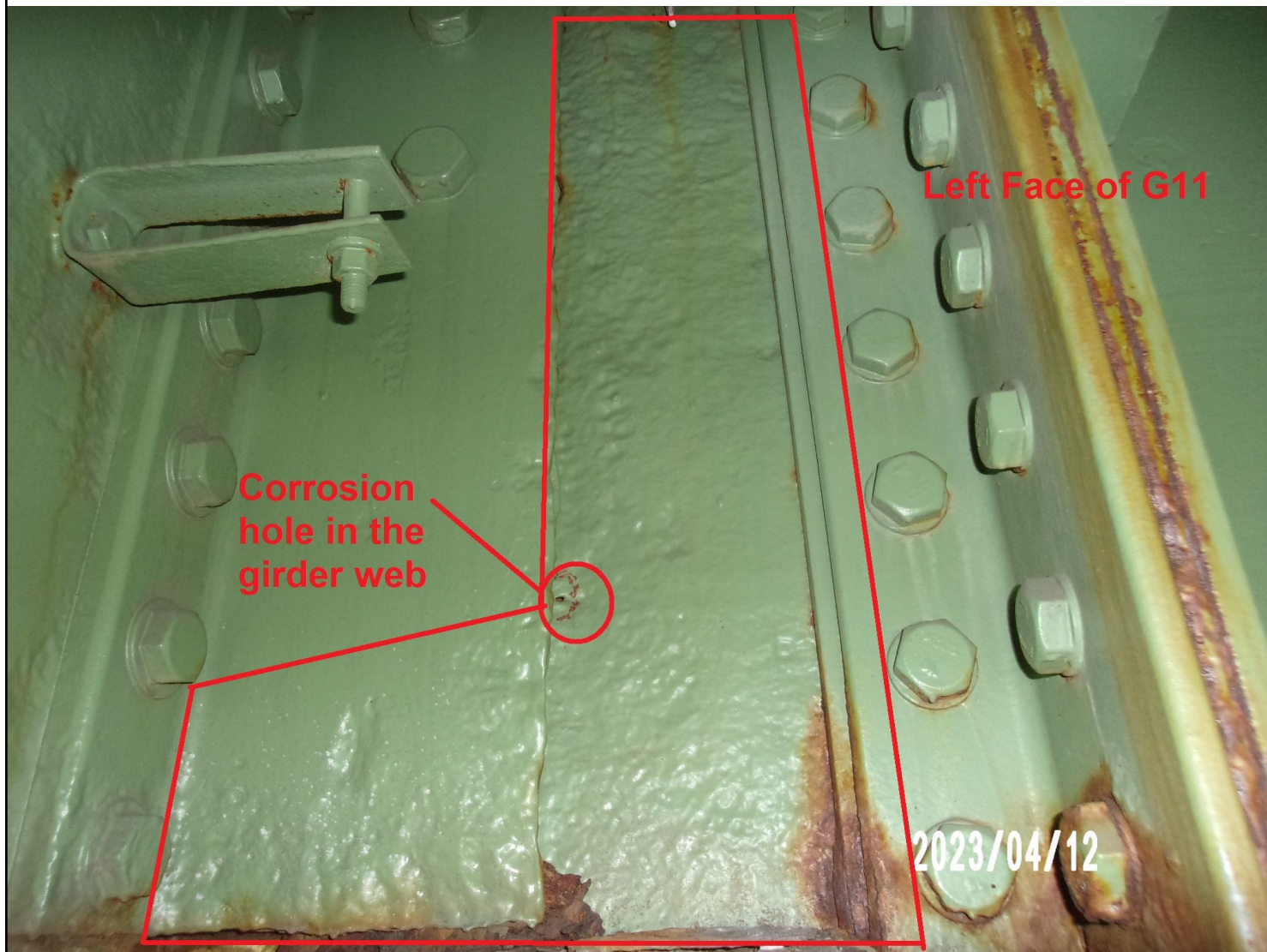
Photo Filename: 23_113_6056.JPG



Attachment Description: The right face of Girder G11 in Span 23 at Pier 23. The girder exhibits section loss in the lower web above the bottom flange with remaining web thickness ranging from 0.21" to 0.61" and remaining average web thickness of 0.42" resulting in approximately 39% average section loss. Also, the lower web exhibits two corrosion holes for 1/2" diameter and 1"L x 3/4"H. Looking Left.

Photo Number: 7

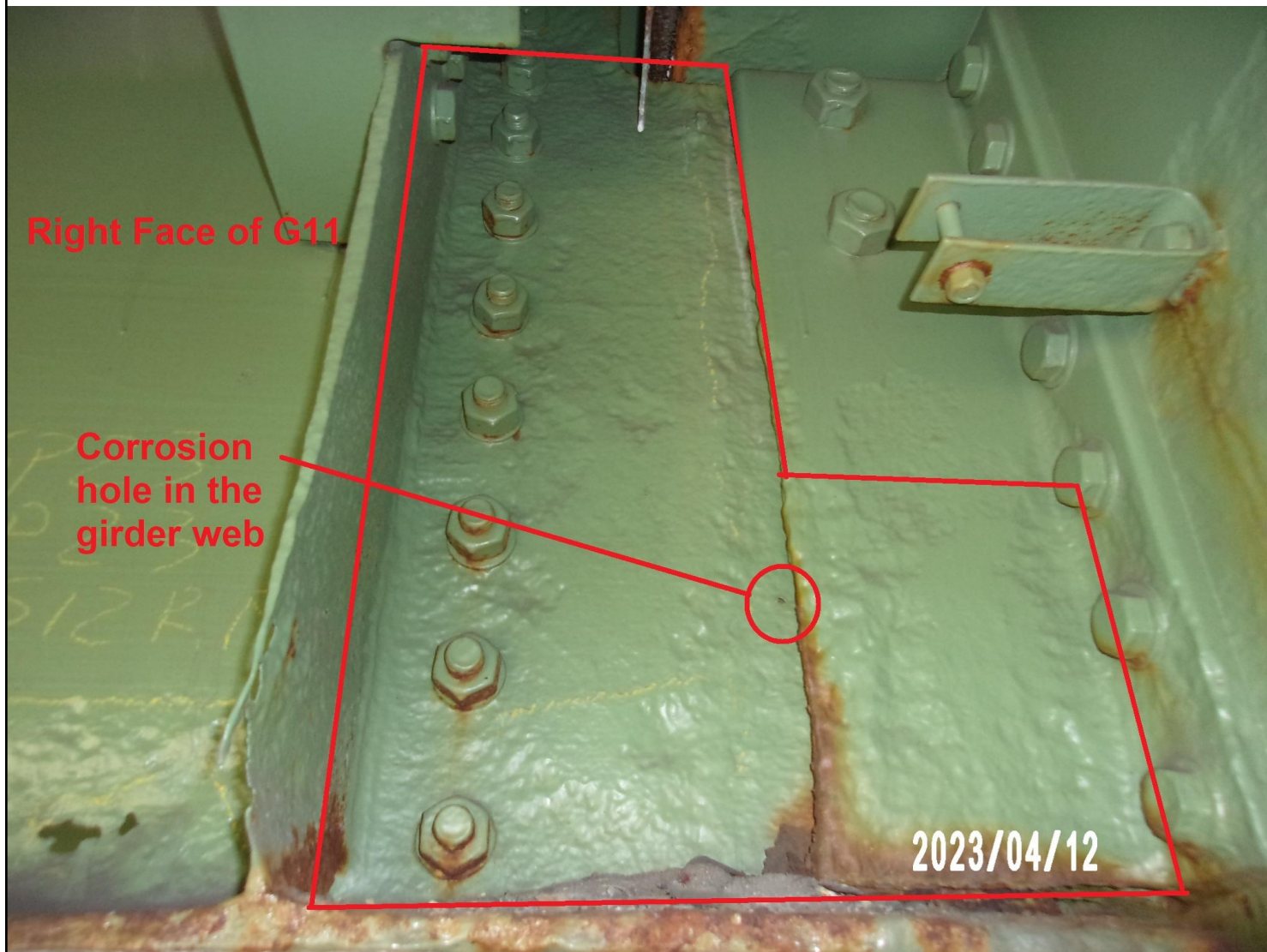
Photo Filename: 23_113_6060.JPG



Attachment Description: The left face of Girder G11 in Span 23 at Pier 23. The girder exhibits average localized section loss of 60% for 8" high in front of bearing with remaining web thickness ranging from 0.23" to 0.57" for the remaining web height resulting in approximately 30% overall shear web area loss. Also, the girder web exhibits 1/8" diameter corrosion hole adjacent to the guide angle. Looking Right.

Photo Number: 8

Photo Filename: 23_113_6057.JPG



Attachment Description: The right face of Girder G11 in Span 23 at Pier 23. The girder exhibits average localized section loss of 60% for 8" high in front of bearing with remaining web thickness ranging from 0.23" to 0.57" for the remaining web height resulting in approximately 30% overall shear web area loss. Also, the girder web exhibits 1/8" diameter corrosion hole adjacent to the guide angle. Looking Left.

Photo Number: 9

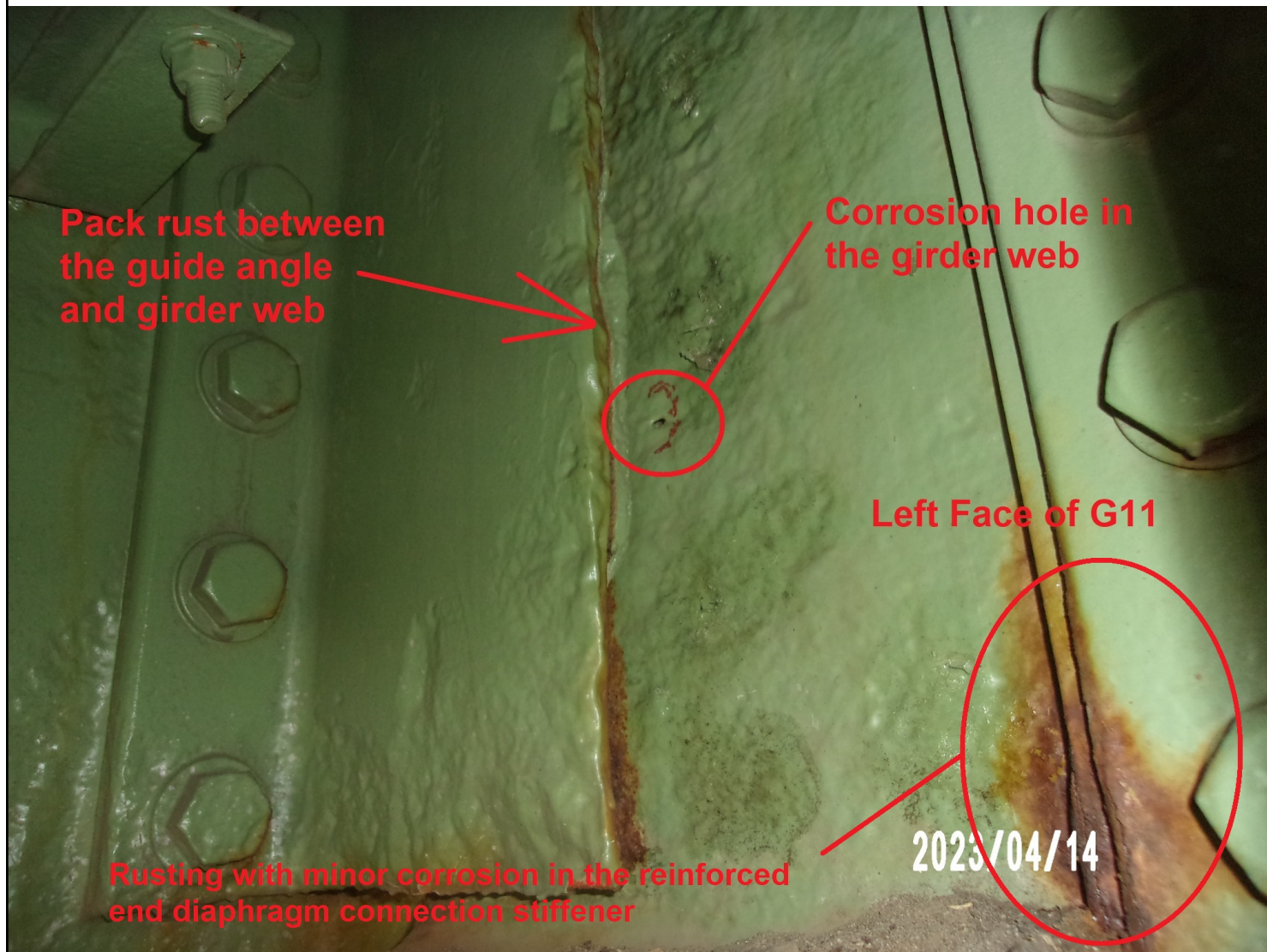
Photo Filename: 23_113_6061.JPG



Attachment Description: The left face of Girder G11 in Span 23 at Pier 23. Close up view of the two corrosion holes for 1/2" diameter and 1"L x 3/4"H approximately 16" from the front side of the bearing and 2" above the bottom flange. Looking Right.

Photo Number: 10

Photo Filename: 23_113_6144.JPG



Attachment Description: The left face of Girder G11 in Span 23 at Pier 23. Close up view of the one corrosion hole for 1/8" diameter adjacent to the guide angle approximately 7" above the bottom flange. Also, the guide angle exhibits 1" pack rust between the angle and girder web. Looking End and Right.